



# **Statement of Basis**

## **Minor Air Quality Permit**

### **DTS - Tea, South Dakota**

**South Dakota  
Department of Environment and Natural Resources**

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## 1.0 BACKGROUND

DTS Incorporated (DTS) in Tea, South Dakota, submitted an air quality permit application on December 23, 2008. Additional information was submitted on April 16 and June 18, 2009. The application was determined to be complete on April 24, 2009. The facility manufactures steel cage enclosures and fuel tanks for industrial sized back-up generators. Metal components are fabricated through various procedures including cutting, drilling, sanding, welding and coating of the finished products. The facility also completes the assembly of the finished product, which includes accessory installation and mounting of the prefabricated motors.

Raw materials are brought to the machining area to be cut, bent, or rolled into the desired shape. These parts are designated for the construction of either the generator tank or the generator enclosure/housing. Once completed, the parts are assembled and/or welded to complete the generator tanks and enclosures. Any emissions from these processes are contained within the building.

After the parts have been assembled, the structures are cleaned by hand with a wax and grease remover, and then primed and painted in the spray booth. The structures are then air dried within the building. Based on the final product and the activities described the primary Standard Industrial Classification (SIC) code is 3448 – Prefabricated Metal Buildings and Components.

The following units and processes will be reviewed:

- Unit #1** EU01 1998 Hurst boiler Model # 545-G-126.3-30W. Total maximum heat input rated at 5.3 million British thermal units per hour (MMBtu/hr). Fired with natural gas.
- Unit #2** EU02 1998 Hurst boiler Model # 545-G-126.3-30W. Total maximum heat input rated at 5.3MMBtu/hr. Fired with natural gas.
- Unit #3** EU03 2007 Caterpillar C15 diesel fuel fired generator rated at 500Kw
- Unit #4** EU04 1998 Kappers Fab Inc. spray booth. The paint booth uses both gravity and high volume low pressure (HVLP) spray guns. Particulate emissions are controlled using dry filter pads.
- Unit #5** 2007 850 gallon aboveground storage tank used for the storage of diesel fuel

The application states that DTS owns the 2007 Caterpillar generator. However, the generator is operated by the South Eastern Electric Cooperative. The generator only supplies power to DTS for backup and peak shaving purposes. In 2007, it was operated an average of 5-10 hours per week.

## 2.0 POTENTIAL EMISSIONS CALCULATIONS

### 2.1 Emission Factors

DENR uses stack test results to determine air emissions whenever stack test data is available from the source or a similar source. When stack test results are not available, DENR relies on manufacturing data, material balance, EPA's Compilation of Air Pollutant Emission Factors (AP-42, Fifth Edition, Volume 1) document, the applicant's application, or other methods to determine potential air emissions.

In this case, DENR used EPA's AP-42 document. EPA's AP-42 1.4-1 classifies boilers according to its gross heat rate. Small industrial boilers have a gross heat rate up to 100 million Btus per hour. DTS' boilers are within this range; therefore, the boilers are classified as small industrial boilers. The emission factors for small industrial boilers are listed in Table 2-1.

**Table 2.1 – Uncontrolled Emission Factors for Boilers**

<b>Pollutant</b>	<b>TSP/PM10<sup>1</sup></b>	<b>SO<sub>2</sub></b>	<b>NO<sub>x</sub></b>	<b>CO</b>	<b>VOCs</b>	<b>HAPs</b>
<b>Natural Gas (lbs/MMscf)</b>	7.6	0.6	100	84	5.5	1.89

<sup>1</sup> – It is noted in AP-42 that particulate emissions from burning natural gas are all less than one micron in diameter. Therefore, the emission factor for particulate matter less than or equal to 10 microns in diameter (PM10) is the same as the emission factor for total suspended particulate (TSP); and

### 2.2 Potential Emissions

Potential emissions for each applicable pollutant are calculated from the maximum design capacity listed in the application and assuming the unit operates every hour of every day of the year, while using the fuel that will emit the greatest emissions. Potential emissions are not realistic of the actual emissions and are used only to identify which air quality permit and requirements DTS is required to meet.

#### 2.2.1 Potential Emissions – Natural Gas Fired Boilers

Equation 2-1 is used to calculate the air emissions based on the capacity of the unit and a heat input of 1,020 Btus per cubic foot for natural gas.

$$\text{Fuel Usage} = \text{Maximum Capacity} \frac{\text{Btus}}{\text{hour}} \div \text{heat content} \frac{\text{Btus}}{\text{cubic foot}} \times 8,760 \frac{\text{hours}}{\text{year}}$$

Using Equation 2-1, the potential fuel usage for the boilers are as follows:

- 5,300,000 Btus/hour / 1,020 Btu/cubic foot x 8,760 hours/year

= 45.5 million cubic feet per year

There is no control equipment associated with the boiler. Therefore, the potential uncontrolled emissions are equal to the potential controlled and will be referred to as potential emissions.

Equation 2-2 is used to calculate the potential emissions for natural gas combustion based on the AP-42 emission factors in Table 2-1 multiplied by the potential fuel usage calculated previously in Equation 2-1.

**Equation 2-2 –Potential emissions from natural gas combustion**

$$\text{PotentialEmissions} \frac{\text{pounds}}{\text{year}} = \text{PotentialFuelUsage} \frac{\text{millioncubicfeet}}{\text{year}} \times \text{EmissionFactor} \frac{\text{pounds}}{\text{millioncubicfeet}}$$
$$\text{PotentialEmissions} \frac{\text{tons}}{\text{year}} = \text{PotentialEmissions} \frac{\text{pounds}}{\text{year}} \div 2000 \frac{\text{pounds}}{\text{ton}}$$

Using Equation 2-2, DENR calculated the potential emissions for DTS' boilers. The results are shown in Table 2-2.

**Table 2-2 – Potential Uncontrolled Emissions from Units Fueled by Natural Gas (tons/year)**

Pollutant	TSP/PM10	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOCs	HAPs
Unit #1	0.18	0.01	2.3	1.9	0.13	0.04
Unit #2	0.18	0.01	2.3	1.9	0.13	0.04
Total	0.36	0.02	4.6	3.8	0.26	0.08

### 2.2.2 Potential Emissions - Diesel Generator (Unit #3)

For the diesel generators, uncontrolled emission factors for each applicable pollutant were derived from the Compilation of Air Pollutant Emission Factors, Fifth Edition, Volume 1 (AP-42) and from the manufacturer's specifications submitted as part of the application. The generator is considered to be a large stationary diesel engine greater than 600 horsepower. The emission factors for sulfur dioxide, volatile organic compounds, and hazardous air pollutants for generators fired by distillate oil were derived from AP-42, Tables 3.4-1, 3.4-2, 3.4-3, and 3.4-4 (10/96), since. The emission factors for nitrogen oxides, carbon monoxide, and particulate matter were taken from the manufacturer's specifications. The emission factors for the generators are summarized in Table 2-3.

**Table 2-3 – Uncontrolled Emission Factors for Large Stationary Diesel Engines (>600 HP)**

Pollutant	TSP/PM10	SO <sub>2</sub>	NO <sub>x</sub>	CO	HC	VOCs	HAPs
<b>Distillate Oil <sup>1</sup> lbs/MMBtu</b>	-	1.01*S	-	-		0.09	1.5x10 <sup>-3</sup>
<b>Manufacturer's Specifications g/Kw-hr (g/hp- hr)</b>	0.2 (0.15)	-	6.4 (4.81)	3.5 (2.63)		-	-

<sup>1</sup> – “S” indicates that the weight % of sulfur in the oil

The generator has no air pollution control devices, therefore potential uncontrolled emissions will be used for all calculations.

The generator has a heat output of 500 kilowatts. In order to calculate potential emissions using the AP-42 emission factors, the heat input capacity of the unit was calculated based on its capacity in kilowatts listed in the application. Generators typically have an operational efficiency of 35%. Equation 2-3 converts the maximum design operating rate from kilowatts (output) to million Btus per hour (heat input) using a conversion factor of 3,413 Btus per hour-kilowatt.

**Equation 2-3 – Converting Heat Output to Heat Input**

$$MaximumCapacity_{heat\ input} \left[ \frac{MMBtus}{hour} \right] = \left( \frac{heat\ output}{efficiency} \right) [W] \times 3,413 \left[ \frac{Btus}{hr - kW} \right] \times \frac{MMBtus}{10^6\ Btus}$$

The maximum capacity heat input for the generator is 4.9 MMBtus per hour.

Equation 2-4, the heat input, and a conversion factor of 2,000 pounds per ton were used to calculate the potential emissions from the generator using the emission factors from AP-42 in Table 2-3.

**Equation 2-4 - Uncontrolled Emission Calculations for Generator**

$$Uncontrolled\ Emissions \left[ \frac{tons}{year} \right] = \left( \frac{EmissionFactor \left[ \frac{pounds}{MMBtu} \right] \times 8,760 \left[ \frac{hours}{year} \right] \times Heat\ Input \left[ \frac{MMBtus}{hour} \right]}{2,000 \left[ \frac{pounds}{tons} \right]} \right)$$

Equation 2-5, heat output in 762 brake horsepower, a conversion factor of 0.0022 pounds per gram, and a conversion factor of 2,000 pounds per ton were used to calculate the potential emissions from the generators fueled by diesel fuel using the emission factors from the manufacturer's specification in Table 2-3.

**Equation 2-5 - Uncontrolled Emission Calculations for Distillate Oil**

$$\text{Uncontrolled Emissions} \left[ \frac{\text{tons}}{\text{year}} \right] = \left( \frac{\text{Emission Factor} \left[ \frac{\text{g}}{\text{hp} - \text{hr}} \right] \times 8,760 \left[ \frac{\text{hours}}{\text{year}} \right] \times \text{Heat Output} [\text{hp}] \times 0.0022 \left[ \frac{\text{pounds}}{\text{g}} \right]}{2,000 \left[ \frac{\text{pounds}}{\text{tons}} \right]} \right)$$

**Table 2-3 – Potential Uncontrolled Emissions from Generators (tons/year)**

Pollutant	TSP/PM10	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOCs	HAPs
Unit #3	1.10	1.05	35.3	19.3	1.93	0.03

### 2.2.3 Potential Emissions – Spray Booth

The emission factors for the spray booths were derived from the material safety data sheets for the products used in the spray booths. The potential emission rate is estimated from the amount of paint and solvent used in the spray booths and the amount of time the booths are operated. DTS identified in the permit application that the spray booth operates 8 hours per day for 6 days per week, 52 weeks per year (2,496 hours per year). Potential emissions are calculated assuming that the facility operates 24 hours per day 365 days per year (8,760 hours per year). Therefore, the potential emissions for the spray booth will be calculated by multiplying the actual emissions by the ratio in Equation 2-6. The actual VOC and HAP emissions from calendar year 2007 were determined to be 1.98 tons and 1.0 tons respectively. (See Appendix A)

**Equation 2-6 – Spray Booth Multiplying Factor**

$$\frac{8,760 \text{ potential operating hours/ year}}{2,496 \text{ actual operating hours/ year}} = 3.51$$

Uncontrolled potential emissions are those that would occur with no emission controls. Dry filter media are used to control particulate matter; however, the filters do not control VOC or HAP emissions.

**Table 2-4  
Spray Booth Potential Emissions**

Pollutant	Potential Emissions
Volatile Organic Compounds (VOCs)	6.9 tons per year
Total Hazardous Air Pollutants	3.6 tons per year

### 2.2.4 Potential Emissions - AST Tank

The potential VOC emissions from the 850 gallon tank were calculated using EPA's Tanks 4.09 program. Total VOC emissions were calculated to be less than one pound per year. ARSD 74:36:05:03.01 exempts from permitting any unit that has the potential to emit less than two tons per year of any criteria pollutant (VOC). However, a unit subject to a state

or federal limit (NSPS) may not be considered exempt. As noted in section 4.3 below, the tank is not subject to a federal limit. Therefore, the tank is considered an insignificant activity and is not required to be included in a permit.

### **3.0 POTENTIAL EMISSIONS SUMMARY**

#### **3.1 Potential Uncontrolled Emission Summary**

The facility's potential uncontrolled emissions are summarized in Table 3-1

**Table 3-1– Facility Potential Uncontrolled Emissions (tons/year)**

<b>Unit</b>	<b>TSP</b>	<b>PM10</b>	<b>SO<sub>2</sub></b>	<b>NO<sub>x</sub></b>	<b>CO</b>	<b>VOC</b>	<b>HAPs</b>
<b>#1 Boiler</b>	0.18	0.18	0.01	2.3	1.9	0.13	0.04
<b>#2 Boiler</b>	0.18	0.18	0.01	2.3	1.9	0.13	0.04
<b>#3 Generator</b>	1.10	1.10	1.05	35.3	19.3	1.93	0.03
<b>#4 Spray Booth</b>	-	-	-	-	-	6.9	3.6
<b>Tank</b>	-	-	-	-	-	-	-
<b>Total</b>	<b>1.46</b>	<b>1.46</b>	<b>1.07</b>	<b>39.9</b>	<b>23.1</b>	<b>9.1</b>	<b>3.7</b>

### **4.0 PERMIT REQUIREMENTS**

#### **4.1 New Source Review**

ARSD 74:36:10:01 states that New Source Review (NSR) regulations apply to areas of the state which are designated as nonattainment pursuant to the Clean Air Act for any pollutant regulated under the Clean Air Act. The DTS Company is located in Tea, South Dakota, which is in attainment or unclassifiable for all the pollutants regulated under the Clean Air Act. Therefore, DTS Company is not subject to NSR review.

#### **4.2 Prevention of Significant Deterioration**

Any stationary source which emits or has the potential to emit 250 tons per year or more of any air pollutant is considered a major source and is subject to prevention of significant deterioration (PSD) requirements (ARSD 74:36:09 – 40 C.F.R. Part 52.21(b)(1)). Any stationary source which emits or has the potential to emit 100 tons per year or more of any air pollutant and is one of the 28 named PSD source categories is subject to PSD requirements (ARSD 74:36:09 – 40 C.F.R. Part 52.21(b)(1)). The following is a list of regulated pollutants under the PSD program:

- Total suspended particulate (PM);
- Particulate matter with a diameter less than or equal to 10 microns (PM10);
- Particulate matter with a diameter less than or equal to 2.5 microns (PM2.5);
- Sulfur dioxide (SO<sub>2</sub>);
- Nitrogen oxides (NO<sub>x</sub>);



- Carbon monoxide (CO);
- Ozone – measured as volatile organic compounds (VOCs);
- Lead;
- Fluorides;
- Sulfuric acid mist;
- Hydrogen sulfide;
- Reduced sulfur compounds; and
- Total reduced sulfur.

DTS does not meet the 250 tons per year threshold and is not one of the 28 named PSD source categories. Therefore, DTS is considered a minor source under the PSD program and is not subject to PSD requirements.

### **4.3 New Source Performance Standards**

DENR reviewed the following new source performance standards (NSPS) to determine if the generator is applicable to an NSPS standard.

#### **4.3.1 ARSD 74:36:07:05 -40 CFR Part 60, Subpart Dc**

The department reviewed the new source performance standards (NSPS) and determined that 40 CFR Part 60, Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units may be applicable. This subpart applies to each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/hr)) or less, but greater than or equal to 2.9 MW (10 MMBtu/hr). Steam generating unit means a device that combusts any fuel and produces steam or heats water or heats any heat transfer medium.

DTS operates two 1998 Hurst boilers each with a maximum design heat input capacity of 5.3 MMBtu/hr. Although the date of manufacture of the boilers is applicable, the maximum heat input of the Hurst boilers is less than the NSPS requirement. Therefore, this subpart is not applicable to the boilers.

#### **4.3.2 ARSD 74:36:07:14 – 40 CFR, Part 60, Subpart Kb**

The department determined that 40 CFR Part 60, Subpart Kb may be applicable.

Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels (including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction, or Modification Commenced after July 23, 1984, is applicable to owners and operators of volatile liquid storage vessels that:

- Has a capacity greater than or equal to 75 cubic meters and used to store volatile organic liquids; and
- Commenced construction, reconstruction, or modification after July 23, 1984.

The storage capacity of the distillate fuel storage tank is 850 gallons (3.2 cubic meters), which is less than 75 cubic meters. The tanks are used to store distillate oil, which has a maximum true vapor pressure of 0.0048 pounds per square inch absolute (0.04 kilopascals) which does not meet the standards for volatile organic compounds. Therefore, this subpart is not applicable to the storage tanks.

#### **4.3.3 ARSD 74:36:07:88 – 40 CFR Part 60, Subpart IIII**

The department review of the NSPS determined the 40 CFR Part 60, Subpart IIII may be applicable. Subpart IIII is applicable to owners and operators of stationary compression ignition (CI) internal combustion engines (ICE) that:

- Commence construction after July 11, 2005 where the stationary CI ICE are manufactured after April 1, 2006 and are not fire pump engines; or
- Modify or reconstruct their stationary CI ICE after July 11, 2005.

In accordance with 40 CFR § 60.4219, a compression ignition means a type of stationary internal combustion engine that is not spark ignition engine. A spark ignition engine is an engine that uses gasoline, natural gas or liquefied petroleum. The DTS Company's engine is not considered a spark ignition engine as the fuel source is diesel fuel and was manufactured in 2007. Therefore, Subpart IIII may be applicable.

The application stated a 2007 date of manufacturer for the gen-set. This date (specifically January 4, 2007) was confirmed with Butler Machinery, supplier of the gen-set to DTS. Butler Machinery confirmed that the unit is certified by the manufacturer to meet applicable Tier 2 standards. Butler also stated that the generator's rated horsepower is 780 horsepower (hp).

As specified in the application, the generator is used for backup and peak shaving. Therefore, the generator is considered a non-emergency stationary CI ICE. ~~Section~~ 40 CFR § 60.4204 (b) requires owners of 2007 model year and later non-emergency stationary generators with a displacement of less than 30 liters per cylinder to meet the emission standards in 40 CFR § 60.4201(a), as applicable.

Based upon the manufacturer specification sheets submitted in the application, the generator has a displacement of 15.2 liters and is a 6 cylinder engine for 2.5 liters displacement per cylinder.

Emergency stationary generator is defined as any internal combustion engine whose operation is limited to emergency situations and required testing and maintenance. DTS owns the generator but the local electrical co-op operates the generator and supplies DTS with back-up power and power for peak-shaving purposes. DENR interprets this usage as a non-emergency use.

40 CFR § 60.4201(a) states that 2007 model year and later non-emergency stationary gensets with a maximum engine power less than or equal to 2,237 KW (3,000 hp) and a displacement of less than 10 liters per cylinder to the emission standards for new nonroad CI engines specified in 40 CFR § 89.112, 40 CFR § 89.113, 40 CFR § 1039.101, 40 CFR § 1039.102, 40 CFR § 1039.104, 40 CFR § 1039.105, 40 CFR § 1039.107, and 40 CFR § 1039.115, as applicable, for all pollutants, for the same model year and maximum engine power.

The maximum engine power for the generator is 780 hp or 580 kilowatts. This is the maximum standby power. The generator is rated as a 500 kilowatt, which is the prime rating and not the maximum standby power. The emissions limits listed 40 CFR § 89.112 are based on the size of the generator and model year. The model years listed indicated the model years for which the specified tier of standards take effect. The size of the generator is based on kilowatts mechanical output (580 kilowatts). The generator is considered a Tier 2 generator. In accordance with 40 CFR §§ 89.112 and 89.113, exhaust emission from a Tier 2 nonroad engines shall not exceed the emission limits in Table 4-1. As noted in 40 CFR § 89.113(c), a constant speed engine is not applicable to the opacity requirements. The emission data notes that there was only one rated speed. Therefore, the opacity standard are not applicable.

**Table 4-1 New Source Performance Standards -40 CFR 89.112 (g/Kw-hr)  
(Tier II)**

Maximum engine power	NMHC+NO <sub>x</sub> <sup>1</sup>	CO <sup>2</sup>	PM <sup>3</sup>
KW>560	6.4	3.5	0.20

<sup>1</sup> – NMHC + NO<sub>x</sub> = Nonmethane Hydrocarbons +Nitrogen Oxides;

<sup>2</sup> – CO = Carbon Monoxide; and

<sup>3</sup> – PM = Particulate Matter.

**Table 4-2 Manufacturer's Emissions Data (g/Kw-hr)**

Maximum engine power	NO <sub>x</sub> + HC <sup>1</sup>	CO <sup>2</sup>	PM <sup>3</sup>	Opacity
500 KW	6.4	3.5	0.2	15 percent during the lugging mode; and 20 percent during the acceleration mode; and 50 percent during the peaks in either the acceleration or lugging modes

<sup>1</sup> – NO<sub>x</sub> +HC + = Nitrogen Oxides + Hydrocarbons ;

<sup>2</sup> – CO = Carbon Monoxide; and

<sup>3</sup> – PM = Particulate Matter.

As noted in 40 CFR § 60.4207(a), on October 1, 2007, the DTS Company must use diesel fuel that meets the requirements of 40 CFR § 80.510(a) for all diesel fueled generators. 40 CFR § 80.510(a) states diesel fuel is limited to 500 part per million (ppm) maximum sulfur content (or 0.05% sulfur by weight) and a minimum cetane index of 40, or a maximum aromatic content of 35 volume percent.

As noted in 40 CFR § 60.4207(b), on October 1, 2010, the DTS Company must use diesel fuel that meets the requirements of 40 CFR § 80.510(b) for nonroad diesel fuel for generators. 40 CFR § 80.510(b) states a maximum sulfur content of 15 ppm (or 0.0015% sulfur by weight) and a minimum cetane index of 40 or a maximum aromatic contact of 35 volume percent.

As noted in 40 CFR § 60.4209(a), the DTS Company must install a non-resettable hour meter prior to startup of the engine. The DTS Company must record the time of operation of the engine and the reason the engine was in operation during that time.

As noted in 40 CFR § 60.4211(a), the DTS Company must operate and maintain stationary CI ICE that achieve the emission standards as required in Table 3-1 and according to the manufacturer's written instructions or procedures developed by the DTS Company that are approved by the engine manufacturer, over the entire life of the engine.

#### **4.4 National Emission Standards for Hazardous Air Pollutants (40 CFR Part 63)**

The department reviewed the Maximum Achievable Control Technology (MACT) standards under 40 CFR Part 63 and determined that the following need to be reviewed further to determine if they are applicable.

##### **4.4.1 ARSD 74:36:08:37 40 CFR Part 63, Subpart Mmmm**

The department reviewed the national emission standards and determined that the DTS Company may be applicable to 40 CFR Part 63, Subpart Mmmm. Subpart Mmmm is subject to owners or operators of miscellaneous metal parts and product surface coating facilities. Miscellaneous metal parts and products include, but are not limited to, metal components of the following types of products as well as the products themselves: motor vehicle parts and accessories, bicycles and sporting goods, recreational vehicles, extruded aluminum structural components, railroad cars, heavy duty trucks, medical equipment, lawn and garden equipment, electronic equipment, magnet wire, steel drums, industrial machinery, metal pipes, and numerous other industrial, household, and consumer products.

Surface coating is the application of coating to a substrate using, for example, spray guns or dip tanks. When application of coating to a substrate occurs, then surface coating also includes associated activities, such as surface preparation, cleaning, mixing, and storage. However, these activities do not comprise surface coating if they are not directly related to the application of the coating. Coating application with handheld, non-refillable aerosol containers, touch-up markers, marking pens, or the application of paper film or plastic film

which may be pre-coated with an adhesive by the manufacturer are not coating operations for the purposes of this subpart.

A facility is it subject to this subpart if it uses 946 liters (250 gallons (gal)) per year, or more, of coatings that contain hazardous air pollutants (HAP) in the surface coating of miscellaneous metal parts and products defined in paragraph (a) of this section; and that is a major source, is located at a major source, or is part of a major source of emissions of HAP. A major source of HAP emissions is any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit any single HAP at a rate of 9.07 megagrams (Mg) (10 tons) or more per year or any combination of HAP at a rate of 22.68 Mg (25 tons) or more per year.

DTS does use more than 250 gallons per year of a coating (Spectracon SPU Gray Primer ) that contains Methyl Isobutyl Ketone. However, DTS has potential HAP emissions of less than 10 tons per year of a single HAP and 25 tons per year of any combination of HAPs and does not meet the definition of a major source. Therefore, this subpart is not applicable to DTS.

#### **4.4.2 ARSD 74:36:08:39 40 CFR Part 63, Subpart ZZZZ**

The department reviewed the national emission standards and determined that the DTS Company may be applicable to 40 CFR Part 63, Subpart ZZZZ. Subpart ZZZZ is subject to owners or operators of a stationary Reciprocating Combustion Engine (RICE) at a major and area source of hazardous air pollutant (HAP) emissions. Stationary RICE is any internal combustion engine which uses reciprocating motion to convert heat energy into mechanical work and which is not mobile. A major source of HAP emissions is a plant site that emits or has the potential to emit any single HAP at a rate of 10 tons or more per year or any combination of HAP at a rate of 25 tons or more per year.

The DTS Company is a minor source of HAP. As noted in 40 CFR § 63.6590(a)(2)(iii) a new stationary RICE is a stationary RICE located at an area source of HAP emissions is new if you commenced construction of the stationary RICE on or after June 12, 2006.

40 CFR § 63.6590(c) states that a RICE located at an minor source of HAPs (an area source) must meet the requirements under the New Source Performance Standard Subpart IIII which is discussed above in section 4.3.3.

#### **4.4.3 ARSD 74:36:08: 40 CFR Part 63, Subpart HHHHHH**

The department reviewed the national emission standards and determined that the DTS Company may be applicable to 40 CFR Part 63, Subpart HHHHHH is applicable to owners or operators of paint stripping operations, autobody refinishing operations and the spray application of coatings containing compounds of chromium (Cr) lead (Pb), manganese (Mn), nickel (Ni), or cadmium (Cd), to any part or product made of metal or plastic, or combinations of metal and plastic that are not motor vehicles or mobile equipment.

An area source of HAP is a source of HAP that is not a major source of HAP, is not located at a major source, and is not part of a major source of HAP emissions. A major source of HAP emissions is any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit any single HAP at a rate of 9.07 megagrams (Mg) (10 tons) or more per year, or emit any combination of HAP at a rate of 22.68 Mg (25 tons) or more per year.

This subpart applies to sources using spray booths, ventilated prep stations, curing ovens, and associated equipment; spray guns and associated equipment, spray gun cleaning equipment

This subpart defines spray-applied coating operations as coatings that are applied using a hand-held device that creates an atomized mist of coating and deposits the coating on a substrate. For the purposes of this subpart, spray-applied coatings do not include the following materials or activities:

- (1) Coatings applied from a hand-held device with a paint cup capacity that is equal to or less than 3.0 fluid ounces (89 cubic centimeters).
- (2) Surface coating application using powder coating, hand-held, non-refillable aerosol containers, or non-atomizing application technology, including, but not limited to, paint brushes, rollers, hand wiping, flow coating, dip coating, electro-deposition coating, web coating, coil coating, touch-up markers, or marking pens.

The Material Safety Data Sheet for High Heat Black Enamel indicates that this coating contains compounds of chromium (Cr). The coating is used only as a touch-up paint and is applied/sprayed out of a non-refillable aerosol container. This type of application does not meet the definition of a spray applied coating. Therefore, this subpart is not applicable to DTS

#### **4.4.4 40 CFR Part 63, Subpart XXXXXX**

The MACT standard for the control of HAPs for nine metal fabrication and finishing area source categories was finalized on July 23, 2008. An area source has the potential to emit less than 10 tons per year of a single HAP or 25 tons per year of a combination of HAPs. The provisions of this subpart are applicable to an area source that is primarily engaged in the operations in one of the following nine source categories:

- (1) Electrical and Electronic Equipment Finishing Operations (NAICS codes 335999 and 335312);
- (2) Fabricated Metal Products (NAICS codes 332117 and 332999);
- (3) Fabricated Plate Work (Boiler Shops) (NAICS codes 332313, 332410, and 332420);
- (4) Fabricated Structural Metal Manufacturing (NAICS code 332312);
- (5) Heating Equipment, except Electric ((NAICS code 333414);
- (6) Industrial Machinery and Equipment Finishing Operations (NAICS codes 333120, 333132 and 333911);
- (7) Iron and Steel Forging (NAICS code 33211);

- (8) Primary Metal products Manufacturing (NAICS code 332618); and
- (9) Valves and Pipe Fittings (NAICS code 332919).

The provisions of this subpart are applicable to new and existing sources primarily engaged in one of the nine operations listed above that use materials that contain or have the potential to emit metal fabrication or finishing metal HAP (MFHAP). DTS has a Standard Industrial Classification Code of 3448 and a North American Industry Classification System code of 332311. DTS is not one of the nine operations applicable to this subpart. Therefore, DTS is not applicable to this subpart

#### **4.5 Minor Air Quality Permit**

Any source operating in South Dakota that meets the requirements of the ARSD 74:36:04:02 is required to obtain a minor air quality permit. Based on the potential emissions summarized in Table 3-1, DTS is a minor source for criteria pollutants, i.e. less than 100 tons per year.

Typically sources applicable to a federal New Source Performance Standard are required to obtain a Title V permit; however, DENR has not required a source to obtain a Title V permit in cases where the New Source Performance Standard just requires the source to maintain records or reports. The Generator's New Source Performance Standard mainly requires DTS to maintain records. In addition, the New Source Performance Standard exempts sources subject to the Generator's New Source Performance Standard from obtaining a Title V permit based solely on their applicability to the subpart. Therefore, the department will not require DTS to obtain a Title V permit.

The boilers and generator that DTS operates are subject to the state's particulate and sulfur dioxide emission limits. Each permitted unit is required to meet the 20 percent opacity limit as required in ARSD 74:36:12:01.

#### **4.6 State Emission Limits**

In accordance with ARSD 74:36:06:01, any unit required to be permitted must comply with the states' particulate matter and sulfur dioxide standards and requirements. In accordance with ARSD 74:36:06:01, a unit that is subject to a NSPS that contains limits on particulate matter and/or sulfur dioxide is not applicable to the state's particulate matter and/or sulfur dioxide emission limits. The NSPS that DTS is subject to contains particulate matter and sulfur dioxide emission limits; therefore the state's particulate matter and sulfur dioxide emission limits are not applicable to the generator (Unit #3). Units #1 thru #3 are also subject to the state opacity limit.

##### **4.6.1 Particulate Matter.**

Each boiler has a maximum heat input capacity of 5.3 million Btus per hour. The generator has a calculated heat input of 4.9 million Btus per hour. In accordance with ARSD

74:36:06:02(1), a fuel-burning unit with heat input values less than 10 million Btus per hour may not exceed 0.6 pounds of particulate matter per million Btus of heat input.

For the boilers:

$EF = 7.6 \text{ lb/MMscf}$

$5,300,000 \text{ Btus/hr} \times 1 \text{ scf}/1,020 \text{ Btu} = 5,196 \text{ scf/hr} (0.005 \text{ MMscf/hr})$

$0.005 \text{ MM scf/hr} \times 7.6 \text{ lb/MMscf} = 0.04 \text{ lbs/hr}$

**Table 4-2 Comparison of Allowable and Actual Particulate Emissions**

	<b>Heat Input (MMBtus/hr)</b>	<b>Allowable Particulate Emission Rate (lbs/hr)</b>	<b>Actual Particulate Emission Rate (lbs/hr)</b>
<b>Unit #1</b>	<b>5.3</b>	<b>3.18</b>	<b>0.04</b>
<b>Unit #2</b>	<b>5.3</b>	<b>3.18</b>	<b>0.04</b>

#### **4.6.2 Sulfur dioxide.**

In accordance with ARSD 74:36:06:02(2), a fuel burning unit may not emit sulfur dioxide in an amount greater than three pounds of SO<sub>2</sub> per million Btus of heat input.

*For the boilers:*

$EF \text{ SO}_2 = 0.6 \text{ lb/MMscf}$

$0.6 \text{ lb/MMscf} \times 0.005 \text{ MMscf/hr} = 0.003 \text{ lb/hr}$

**Table -4-3 Comparison of Allowable and Actual SO<sub>2</sub> Emissions**

	<b>Heat Input (MMBtus/hr)</b>	<b>Allowable SO<sub>2</sub> Emission Rate (lbs/hr)</b>	<b>Actual SO<sub>2</sub> Emission Rate (lbs/hr)</b>
<b>Unit #1</b>	<b>5.3</b>	<b>15.9</b>	<b>0.003</b>
<b>Unit #2</b>	<b>5.3</b>	<b>15.9</b>	<b>0.003</b>



## **5.0 SUMMARY OF APPLICABLE REQUIREMENTS**

A minor source is defined as any source with the potential to emit less than 100 tons per year of a criteria pollutant. A source operating in South Dakota that meets the definition of a minor source is required to obtain a minor air quality permit under ARSD 74:36:04. Enforceable conditions are not required in the permit to limit HAP emissions below the major source threshold.

DTS will be required to operate within the requirements stipulated in the following regulations under the minor air quality permit program:

- ARSD 74:36:04 – Operating Permits for Minor Sources;
- ARSD 74:36:11 – Performance Testing; and
- ARSD 74:36:12 – Control of Visible Emissions.

## **6.0 RECOMMENDATION**

Based on the information submitted in the air quality permit application, the department recommends conditional approval of a minor air quality operating permit for DTS, Inc. in Tea, South Dakota. The generator's current useage as a peak-shaving generator negates its classification as an emergency generator and places it into the non-emergency classification where it must meet the NSPS IIII Tier 2 Emission Standards.

Questions regarding this permit review should be directed to Keith Gestring, Natural Resources Project Engineer.

